

## CLAIMS

What is claimed is:

1. A method comprising:  
representing a graph mapped data structure as a fixed set of tables.
2. The method of claim 1 wherein the graph mapped data structure is selected from the group consisting of directed graph, a directed acyclic graph, a rooted tree, a tree, and a well-formed tree.
3. The method of claim 1 wherein the fixed set of tables is in a relational database (RDB).
4. The method of claim 1 wherein the graph mapped data structure is compliant with the eXtensible Markup Language (XML).
5. The method of claim 1 wherein the representing is a mapping.
6. The method of claim 5 wherein the mapping is based upon the structure of XML.
7. The method of claim 1 wherein the graph mapped data structure is compliant with the eXtensible Markup Language (XML), the fixed set of tables is in a relational database (RDB), and the representation is based upon the structure of an XML document.

8. A processing system comprising a processor, which when executing a set of instructions performs the method of claim 1.

9. A machine-readable medium having stored thereon instructions, which when executed performs the method of claim 1.

10. The method of claim 1 wherein the representation is selected from the group consisting of a linked list mapping, an array of objects, and chunks.

11. The method of claim 1 wherein the representation further comprises:

a node identification (ID);

a parent ID;

a child ID; and

a sibling ID.

12. The method of claim 11 wherein the child ID is selected from the group consisting of first child ID, second child ID, ...,  $n^{\text{th}}$  child ID.

13. The method of claim 11 wherein the sibling ID is selected from the group consisting of next sibling ID and previous sibling ID.

14. The method of claim 1 wherein the representation further comprises:

a child array identification (ID); and

a child array.

15. The method of claim 14 wherein the child array comprises:

- a node ID; and
- another child array ID.

16. The method of claim 15 wherein the representation is recursive.

17. The method of claim 1 wherein the fixed set of tables further comprises a plurality of fixed different sized tables.

18. The method of 17 wherein the tables represent tree structure information selected from the group consisting of at least one node and at least one subnode.

19. The method of claim 17 wherein the representation further comprises:

- a chunk identification (ID); and
- a chunk.

20. The method of claim 19 wherein the chunk comprises:

- a node ID; and
- another child ID.

21. The method of claim 20 wherein the child ID is a chunk ID.

22. The method of claim 21 wherein the representation is recursive.

23. The method of claim 20 wherein the representation is recursive.

24. A method comprising:

mapping a tree structured database onto a relational database.

25. The method according to claim 24, wherein a node and its direct children nodes in the tree are mapped into a table in the relational database.

26. The method of claim 25 wherein the method may be applied recursively to any node and its sub-nodes.

27. The method of claim 24 wherein the tree structured database is compliant with the eXtensible Markup Language (XML), an XML Document Object Model (DOM) defines nodes, and an atomic unit is a node.

28. The method of claim 27 wherein the tree structure representation in the relational database is selected from the group consisting of a linked list, an array of objects, and variable-grained chunks.

29. The method of claim 27 wherein an XML format is stored in the relational database.

30. A processing system comprising a processor, which when executing a set of instructions performs the method of claim 24.

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31. A machine-readable medium having stored thereon instructions, which when executed performs the method of claim 24.

32. An apparatus comprising:

means for inputting a graph based data structure;

means for transforming the graph based data structure to a fixed set of tables; and

means for outputting the fixed set of tables.

33. The apparatus of claim 32 further comprising means for transforming the graph based data structure.

34. The apparatus of claim 32 further comprising means for transforming data represented in the graph based data structure.

35. The apparatus of claim 32 further comprising:

means for transforming the graph based data structure; and

means for transforming data represented in the graph based data structure.

36. The apparatus of claim 32 wherein the fixed set of tables is substantially a relational database.

37. The apparatus of claim 32 wherein the graph based data structure is substantially represented by an XML document.

38. A machine-readable medium having stored thereon information representing the apparatus of claim 32.

39. A system comprising a processor, which when executing a set of instructions, performs the following:

inputs a graph based data structure;  
transforms the graph based data structure to tables; and  
outputs the tables.

40. The system of claim 39 wherein the transformation is to a fixed set of tables.

41. The system of claim 39 wherein the transformation is to a fixed set of different sized tables.

42. The system of claim 39 wherein the transformation to tables is based substantially upon an XML representation.

43. The system of claim 39 further comprising transferring a payment and/or a credit.

44. A method for representing an eXtensible Markup Language (XML) data structure as a fixed set of tables in a relational database (RDB), the method comprising:

(a) inputting the XML data structure;  
(b) grouping at least one XML node and possibly any sub-node into a relationship

selected from the group consisting of linked list, array of object, and chunk;

(c) generating a fixed sized table for the grouping in (b);

(d) if necessary, repeating (b) and (c) and creating references to any repeated groupings (b) and tables (c), until the XML data structure is completed; and

(e) outputting the resulting fixed sized tables for use in a RDB.

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